

REMARKS

Claims 1-18 are pending in this application. By this Amendment, Applicants amend the Drawings and Claims 1-18.

The drawings were objected to because Fig. 12 was not designated as --PRIOR ART--. Applicants have amended Fig. 12 to be properly designated as --PRIOR ART-- in the accompanying Request for Approval of Drawing Corrections. Accordingly, Applicants respectfully request reconsideration and withdrawal of this objection.

Claims 1-4 were rejected under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite. Applicants note that, although the Examiner indicated that only claims 1-4 were rejected under 35 U.S.C. § 112, second paragraph, each of the independent claims 1, 5, 10 and 15 was discussed in the body of the rejection. Accordingly, Applicants assume that the Examiner intended to rejection claims 1-18, NOT claims 1-4. Applicants have amended the claims to correct the remaining informalities noted by the Examiner. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

Claims 1, 3, 5, 6, 8, 10, 11, 13, 15 and 17 were rejected under 35 U.S.C. § 102(e) as being anticipated by Kledzik et al. (U.S. 6,313,998). And Claims 2, 7, 12 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kledzik et al. in view of Mandai et al. (U.S. 5,726,612). These rejections are respectfully traversed.

Claim 1 has been amended to recite:

“A module substrate mounting structure comprising:
a motherboard having connecting pads disposed on a surface thereof; and
a plurality of module substrates each having connecting members attached to a surface thereof via connecting terminals disposed on each of said plurality of module substrates; wherein
said plurality of module substrates are stacked with a space therebetween on said motherboard, said connecting members of said plurality of module substrates are electrically connected to said connecting pads on said motherboard, a plurality of said connecting members are arranged along an edge portion of each of said plurality of module substrates, said plurality of module substrates are stacked with said connecting members aligned with each other, a plurality of said connecting pads are arranged on the surface of said motherboard in the

direction of arrangement of said connecting members, **a plurality of rows of said connecting pads are arranged to be sequentially offset from one another from an inner region of said motherboard where said module substrates are mounted toward an outer region of said mother substrate, said connecting members of an upper module substrate of said plurality of module substrates are electrically connected to an outer row of connecting pads and said connecting members of a lower module substrate are electrically connected to an inner row of connecting pads disposed inwardly of said outer row of connecting pads**, the length of said connecting members increases as the position of respective ones of said plurality of module substrates connected thereto is higher, and **said connecting members connected to said upper module substrate project further from said upper module substrate than said connecting members connected to said lower module substrate.**" (Emphasis added)

In contrast to the present claimed invention, Kledzik et al. teaches elongated connecting pads 103 on the motherboard 101 which are arranged and aligned in a **single row**. Kledzik et al. clearly fails to teach or suggest "a plurality of rows of said connecting pads are arranged to be sequentially offset from one another from an inner region of said motherboard where said module substrates are mounted toward an outer region of said mother substrate, said connecting members of an upper module substrate of said plurality of module substrates are electrically connected to an outer row of connecting pads and said connecting members of a lower module substrate are electrically connected to an inner row of connecting pads disposed inwardly of said outer row of connecting pads" as recited in the present claimed invention.

In addition, Kledzik et al. teaches that the connecting terminals 107U of the upper module substrate 104U project from the edges of the module substrate 104U the exact same distance as the connecting terminals 107L project from the edges of the module substrate 104L. Thus, Kledzik et al. clearly fails to teach or suggest "said connecting members connected to said upper module substrate project further from said upper module substrate than said connecting members connected to said lower module substrate" as recited in the present claimed invention.

Thus, Kledzik clearly does not anticipate Applicants' Claim 1, as alleged by the Examiner, since Kledzik clearly does not disclose or teach at least the two features of

Claim 1 discussed above. Furthermore, Kledzik clearly teaches away from Applicants' claimed invention since Kledzik teaches that the connecting pads 103 are aligned in a single row on the motherboard 101 and the connecting terminals 107U of the upper module substrate 104U project from the edges of the module substrate 104U the exact same distance as the connecting terminals 107L project from the edges of the module substrate 104L. Therefore, Kledzik could not even be relied upon in an obviousness rejection of Applicants' Claim 1 since it is error to find obviousness where references diverge and teach away from the invention at hand. W.L. Gore & Assoc. v. Garlock Inc., 721 F.2d 1540, 1550, 220 USPQ 303, 311 (Fed. Cir. 1983).

Claim 5 has been amended to recite:

"A module substrate mounting structure comprising:
a motherboard having connecting pads disposed on a surface thereof; and
a plurality of module substrates each having connecting attached to a surface thereof via connecting terminals disposed on each of said plurality of module substrates; wherein
said plurality of module substrates are stacked with a space therebetween on said motherboard, said connecting members of said plurality of module substrates are electrically connected to said connecting pad on said motherboard, a plurality of said connecting terminals are arranged along an edge portion of each of said plurality of module substrates, **said plurality of module substrates are stacked on said motherboard and are sequentially offset from one another in the direction of arrangement of said connecting terminals so that said edge portions with said connecting terminals disposed thereon are aligned with one another in a stacking direction, and said connecting pads electrically connected to said connecting terminals of said plurality of module substrates via said connecting members are arranged in the same row.**" (Emphasis added)

Claim 10 has been amended to recite:

"A module substrate mounting structure comprising:
a motherboard having connecting pads disposed on a surface thereof; and
a plurality of module substrates each having connecting members attached to a surface thereof via connecting terminals disposed on each of said plurality of module substrates; wherein
said plurality of module substrates are stacked with a space therebetween on said motherboard, said connecting members of said

plurality of module substrates are electrically connected to said connecting pads on said motherboard, a plurality of said connecting terminals are arranged along an edge portion of each of said plurality of module substrates, **said plurality of module substrates are stacked on said motherboard and are sequentially offset from one another in the direction of arrangement of said connecting terminals so that said edge portions with said connecting terminals disposed thereon are aligned with one another in a stacking direction**, a plurality of said connecting pads are arranged on the surface of said motherboard in the direction of arrangement of said connecting terminals, **a plurality of rows of said connecting pads are arranged to be sequentially offset from one another from an inner region on said motherboard where said plurality of module substrates are mounted toward an outer region of said motherboard, said connecting members of an upper module substrate of said module substrates are electrically connected to an outer row of said plurality of rows of connecting pads and said connecting members of a lower module substrate are electrically connected to an inner row of connecting pads disposed inwardly of said outer row of connecting pads**, and said connecting members connected to said upper module substrate project further from said upper module substrate than said connecting members connected to said lower module substrate." (Emphasis added)

In contrast to the present claimed invention, the module substrates 104U and 104 L and the connecting terminals 107U and 107L of Kledzik et al. are aligned with one another such that all of the connecting terminals overlap one another in the stacking direction of the module substrate. Kledzik et al. clearly fails to teach or suggest "said plurality of module substrates are stacked on said motherboard and **are sequentially offset from one another in the direction of arrangement of said connecting terminals** so that said edge portions with said connecting terminals disposed thereon are aligned with one another in a stacking direction" (emphasis added) as recited in claims 1 and 10 of the present application.

In addition, as noted above, Kledzik et al. teaches only a single row of connecting pads 103, and thus clearly fails to teach or suggest "a plurality of rows of said connecting pads are arranged to be sequentially offset from one another from an inner region on said motherboard where said plurality of module substrates are mounted toward an outer region of said motherboard, said connecting members of an

upper module substrate of said module substrates are electrically connected to an outer row of said plurality of rows of connecting pads and said connecting members of a lower module substrate are electrically connected to an inner row of connecting pads disposed inwardly of said outer row of connecting pads” as recited in claim 10 of the present application.

Thus, Kledzik clearly does not anticipate Applicants’ Claims 5 and 10, as alleged by the Examiner, since Kledzik clearly does not disclose or teach at least the features of Claims 5 and 10 discussed above. Furthermore, Kledzik clearly teaches away from Applicants’ claimed invention as noted above, and cannot be relied upon in an obviousness rejection of Applicants’ Claims 5 and 10.

Claim 15 has been amended to recite:

“A module substrate mounting structure comprising:
a motherboard having connecting pads disposed on a surface thereof; and
a plurality of module substrates each having connecting members attached to a surface thereof via connecting terminals disposed on each of said plurality of module substrates; wherein
said plurality of module substrates are stacked with a space therebetween on said motherboard, said connecting members of said plurality of module substrates are electrically connected to said connecting pads on said motherboard, a plurality of said connecting terminals are arranged along a pair of edge portions of each of said plurality of module substrates, and **said module substrates are stacked with the space therebetween on said motherboard so that the direction of arrangement of said connecting terminals of an upper module substrate of said plurality of module substrates is substantially perpendicular the direction of arrangement of said connecting terminals of a lower module substrate of said plurality of module substrates.**” (Emphasis added)

In contrast to the present claimed invention, Kledzik et al. teaches that all of the connecting terminals are arranged along edges of the module substrates 104U and 104L which are parallel to each other. Thus, Kledzik et al. clearly fails to teach or suggest “said module substrates are stacked with the space therebetween on said motherboard so that the direction of arrangement of said connecting terminals of an upper module substrate of said plurality of module substrates is **substantially**

perpendicular the direction of arrangement of said connecting terminals of a lower module substrate of said plurality of module substrates" (emphasis added) as recited in the present claimed invention.

Thus, Kledzik clearly does not anticipate Applicants' Claim 15, as alleged by the Examiner, since Kledzik clearly does not disclose or teach at least the two features of Claim 15 discussed above. Furthermore, Kledzik clearly teaches away from Applicants' claimed invention since Kledzik teaches a parallel arrangement of the connecting terminals which is the opposite of the substantially perpendicular arrangement recited in Applicants' claim 15. Thus, Kledzik could not be relied upon in an obviousness rejection of Claim 15.

Mandai et al. is relied upon merely to teach a nozzle suction formed electronic component on a substrate, and certainly fails to teach or suggest any of the emphasized features described above. Thus, Applicants respectfully submit that Mandai et al. fails to cure the deficiencies of Kledzik et al. described above.

Accordingly, Applicants respectfully submit that Kledzik et al. and Mandai et al., taken individually or in combination, fail to teach or suggest the unique combination of features recited in claims 1, 5, 10 and 15 of the present application.

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1, 5, 10 and 15 are allowable. Claims 2-4, 6-9, 11-14 and 16-18 depend upon claims 1, 5, 10 and 15, respectively, and are therefore allowable for at least the reasons that claims 1, 5, 10 and 15 are allowable.

In view of the foregoing Remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are respectfully solicited.

To the extent necessary, Applicants petition the Commissioner for a Two-month extension of time, extending to February 12, 2003, the period for response to the Office Action dated September 12, 2002.

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The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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VERSION WITH MARKINGS SHOWING CHANGES MADE

1. (amended) A module substrate mounting structure comprising:
a motherboard having connecting pads disposed on a surface thereof; and
a plurality of module substrates each having connecting [terminals disposed on]
members attached to a surface thereof via connecting terminals disposed on each of
said plurality of module substrates; wherein

said plurality of module substrates are stacked with a space therebetween on
said motherboard, said connecting [terminals] members of said plurality of module
substrates are electrically connected to said connecting pads on said motherboard, a
plurality of said connecting [terminals] members are arranged along an edge portion of
each of said plurality of module substrates, said plurality of module substrates are
stacked with said connecting [terminals] members aligned with each other, a plurality of
said connecting pads are arranged on the surface of said motherboard in the direction
of arrangement of said connecting [terminals] members, a plurality of rows of said
connecting pads are arranged to be sequentially offset from one another from [inside of
a region on] an inner region of said motherboard where said module substrates are
mounted toward an [outside thereof] outer region of said mother substrate, said
connecting [terminals] members of an upper module substrate of said plurality of
module substrates are electrically connected to an outer row of connecting pads [on the
outer side of a row of connecting pads connected to said connecting terminals of] and
said connecting members of a lower module substrate [via said connecting members]
are electrically connected to an inner row of connecting pads disposed inwardly of said
outer row of connecting pads, the length of said connecting members increases as the
position of respective ones of said plurality of module substrates connected thereto is
higher, and said connecting members connected to said upper module substrate project
further from said upper module substrate than said connecting members connected to
said lower module substrate.

2. (amended) A module substrate mounting structure according to Claim 1,
wherein said plurality of module substrates have a nozzle suction area that is arranged

to be drawn by a component-transporting suction nozzle.

3. (amended) A module substrate mounting structure according to Claim 1, wherein a ratio of a length to a width of each of said plurality of module substrates is within a range of about 1/3 to about 1/1.

4. (amended) A module substrate mounting structure according to Claim 1, wherein said plurality of module substrates have a converter power-supply circuit.

5. (amended) A module substrate mounting structure comprising:
a motherboard having connecting pads disposed on a surface thereof; and
a plurality of module substrates each having connecting [terminals disposed on] attached to a surface thereof via connecting terminals disposed on each of said plurality of module substrates; wherein

said plurality of module substrates are stacked with a space therebetween on said motherboard, said connecting [terminals] members of said plurality of module substrates are electrically connected to said connecting pad on said motherboard, a plurality of said connecting terminals are arranged along an edge portion of each of said plurality of module substrates, said plurality of module substrates are stacked on said motherboard and are sequentially offset from one another in the direction of arrangement of said connecting terminals so that said edge portions with said connecting terminals disposed thereon are aligned with one another in a stacking direction, and said connecting pads [to be] electrically connected to said connecting terminals of said plurality of module substrates via said connecting members are [located] arranged in the same row.

6. (amended) A module substrate mounting structure according to Claim 5, wherein a lower substrate recognition mark is located on an exposed portion of [said] a lower module substrate of said plurality of module substrates [which is exposed as a result of said upper module substrate being arranged in an offset manner].

7. (amended) A module substrate mounting structure according to Claim 5, wherein said plurality of module substrates have a nozzle suction area that is arranged to be drawn by a component-transporting suction nozzle.

8. (amended) A module substrate mounting structure according to Claim 5, wherein a ratio of a length to a width of each of said plurality of module substrates is within a range of about 1/3 to about 1/1.

9. (amended) A module substrate mounting structure according to Claim 5, wherein said plurality of module substrates have a converter power-supply circuit.

10. (amended) A module substrate mounting structure comprising:
a motherboard having connecting pads disposed on a surface thereof; and
a plurality of module substrates each having connecting [terminals disposed on] members attached to a surface thereof via connecting terminals disposed on each of said plurality of module substrates; wherein

said plurality of module substrates are stacked with a space therebetween on said motherboard, said connecting [terminals] members of said plurality of module substrates are electrically connected to said connecting pads on said motherboard, a plurality of said connecting terminals are arranged along an edge portion of each of said plurality of module substrates, said plurality of module substrates are stacked on said motherboard and are sequentially offset from one another in the direction of arrangement of said connecting terminals so that said edge portions with said connecting terminals disposed thereon are aligned with one another in a stacking direction, a plurality of said connecting pads are arranged on the surface of said motherboard in the direction of arrangement of said connecting terminals, a plurality of rows of said connecting pads are arranged to be sequentially offset from one another from [inside of a] an inner region on said motherboard where said plurality of module substrates are mounted toward an [outside thereof] outer region of said motherboard,

said connecting [terminals] members of an upper module substrate of said module substrates are electrically connected to [said] an outer row of said plurality of rows of connecting pads [on the outer side of said row of connecting pads connected to] and said connecting [terminals] members of a lower module substrate [via said connecting members] are electrically connected to an inner row of connecting pads disposed inwardly of said outer row of connecting pads, and said connecting members connected to said upper module substrate project further from said upper module substrate than said connecting members connected to said lower module substrate.

11. (amended) A module substrate mounting structure according to Claim 10, wherein a lower substrate recognition mark is located on an exposed portion of said lower module substrate [which is exposed as a result of said upper module substrate being arranged in an offset manner].

12. (amended) A module substrate mounting structure according to Claim 10, wherein said plurality of module substrates have a nozzle suction area that is arranged to be drawn by a component-transporting suction nozzle.

13. (amended) A module substrate mounting structure according to Claim 10, wherein a ratio of a length to a width of each of said plurality of module substrates is within a range of about 1/3 to about 1/1.

14. (amended) A module substrate mounting structure according to Claim 10, wherein said plurality of module substrates have a converter power-supply circuit.

15. (amended) A module substrate mounting structure comprising:
a motherboard having connecting pads disposed on a surface thereof; and
a plurality of module substrates each having connecting [terminals disposed on] members attached to a surface thereof via connecting terminals disposed on each of said plurality of module substrates; wherein

said plurality of module substrates are stacked with a space therebetween on said motherboard, said connecting [terminals] members of said plurality of module substrates are electrically connected to said connecting pads on said motherboard, a plurality of said connecting terminals are arranged along a pair of edge portions of each of said plurality of module substrates, and said module substrates are stacked with the space therebetween on said motherboard so that the direction[s] of arrangement of said connecting terminals of [said] an upper module substrate of said plurality of module substrates [and lower module substrates are nearly] is substantially perpendicular [to each other] the direction of arrangement of said connecting terminals of a lower module substrate of said plurality of module substrates.

16. (amended) A module substrate mounting structure according to Claim 15, wherein said plurality of module substrates have a nozzle suction area that is arranged to be drawn by a component-transporting suction nozzle.

17. (amended) A module substrate mounting structure according to Claim 15, wherein a ratio of a length to a width of each of said plurality of module substrates is within a range of about 1/3 to about 1/1.

18. (amended) A module substrate mounting structure according to Claim 15, wherein said plurality of module substrates have a converter power-supply circuit.